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Tanskanen, Antti Olavi

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Abstract

The birth of a grandchild is often assumed to increase subjective well-being of older adults. Previous studies, however, have been both scarce and methodologically limited. Here, associations between grandparenthood and subjective well-being (measured by self-rated life satisfaction and meaning of life scores) were investigated using data from the Survey of Health, Aging and Retirement in Europe (SHARE). SHARE is a longitudinal study of individuals aged 50 years and above from 16 countries, including five follow-up waves between 2004 and 2015 ($n = 67,110$ person-observations from 41,123 persons). Within-person regressions focusing on each participant's variation in subjective well-being over time were applied to detect changes longitudinally. Becoming a grandparent was associated with increased meaning of life scores among participants. However, similar effects were not found in the case of self-rated life satisfaction. The results are discussed in relation to studies examining whether entering parenthood is associated with subjective well-being.

Introduction

Becoming parents and grandparents are recognized across cultures as life-affirming experiences. Indeed, this emotional benefit may underlie the reciprocal benefits grandparents receive from their grandchildren (Hilbrand et al., 2017). In recent decades, an increasing body of research has investigated the association between parenthood and subjective well-being (e.g., Aassve, Goisis, & Sironi, 2012; Campbell, Converse & Rodgers, 1976; Glenn & McLanahan, 1982; Glenn & Weaver, 1979; Myrskylä & Margolis, 2014; Stanca, 2012). Although some studies have found evidence that having a child may increase parental well-being in the short term (e.g., Myrskylä & Margolis, 2014), a large majority of research shows that there is no association between parenthood and well-being or that the association is negative (see Hansen, 2012, for a review). Thus, although most people will have children at some point of their life, parenthood tends not to be associated with increased subjective well-being (Lyubomirsky & Boehm, 2010).

Reasons for this “parenthood paradox” (Baumeister, 1991) could be related to the fact that raising a child is a hard task. After the arrival of a new baby, parents lives are often turned upside-down. Now they are responsible not only for their own safety and well-being but also that of their vulnerable offspring (Lyubomirsky & Boehm, 2010). Thus, having a child can lead to constant worries about child welfare and the financial situation of the family (Stanca, 2012). In addition, most new parents face the challenges of sleep deprivation and increased fatigue (Fleming, Ruble, Flett, & Van Wagner, 1990). The presence of a newborn child also increases time pressures on the parents who may have less leisure time and be unable to engage in the same social activities, at least not with the same intensity, as before (Secombe, 1991). Finally, having a new baby is also likely to reduce time and resources partners have available to invest in one another, often leading to reduced communication and marital satisfaction (e.g., Glenn & McLanahan, 1982; Gorchoff, John, & Helson, 2008; Rollins & Cannon, 1974; Van Laningham, Johnson, & Amato, 2001). It is easy to see that sometimes the joy of becoming a new parent may be outweighed by the challenges it brings.

Although the birth of a child may not necessarily increase parental subjective well-being, there are several reasons to believe that having a grandchild would increase the subjective well-being of grandparents. The role of grandparents significantly differs

from that of parents because in contemporary Western societies, grandparents usually have no direct responsibilities to take care of their grandchildren's welfare, with the exception of older adults who are the primary caregivers of their grandchildren (Coall & Hertwig, 2010). This phenomenon suggests that having a grandchild may provide satisfaction and meaning of life for grandparents with few if any of the challenging experiences that parents often have when a child arrives. Thus, one may assume that having a grandchild might increase individuals' subjective well-being, even if having a child may not.

Two previous studies have investigated the association between grandparenthood and subjective well-being using nationally representative data. Using data from approximately 2,300 older Finns aged between 62 and 67 years, Danielsbacka and Tanskanen (2016) found that grandparenthood was not associated with increased self-rated happiness after controlling for several potential confounding factors. In contrast, when analyzing data from the UK of almost 12,000 individuals aged 40 years and above, Powdthavee (2011) found that being a grandparent was associated with increased life satisfaction. There is also a body of studies based on small-scale and non-representative samples showing that grandmothers tend to be more satisfied with being a grandparent than grandfathers (e.g., Neugarten & Weinstein, 1964; Thiele & Whelan, 2008; Thomas, 1986). Therefore, current evidence is mixed on whether becoming a grandparents is associated with subjective well-being. Moreover, there is likely to be substantial and possibly systematic variation between grandparents.

One limitation of previous studies is that grandparents are not separated by lineage, meaning that there is a lack of information on whether maternal grandparents are more satisfied with being grandparents compared to paternal grandparents. One exception to this general trend is the study by Somary and Stricker (1998) that asked 152 American "grandparents-to-be" about their expectations and experiences of being a grandparent. After the grandchild was born, they followed up 103 of these grandparents. They found that grandmothers expected and experienced more satisfaction from being a grandparent than did grandfathers. Moreover, maternal grandparents were more satisfied with being a grandparent than they expected, whereas paternal grandparents' expectations and experiences did not differ from each other.

The most important limitation of previous studies is that the findings are based on either

cross-sectional or non-representative samples. We aim to address these limitations here by investigating the associations between grandparenthood and subjective well-being using longitudinal data and fixed-effect models that focus on within-individual variation in exposure (becoming a grandparent) and exclude between-individual effects (Curran and Bauer, 2011; Morgan, 2013). We provide both between-person and within-person (or fixed-effect) regression models. Between-person models focus on subjective well-being between grandparents and non-grandparents, and within-person models show longitudinally whether becoming a grandparent is associated with subsequent changes in well-being, providing a strong test for causality. Our analyses are based on five waves of the Survey of Health, Aging and Retirement in Europe (SHARE), which includes respondents aged 50 years and above from 16 European countries.

Materials and methods

Data were drawn from the SHARE. The target population consisted of people aged 50 years and above who were speaking the official language of their country and who did not live abroad or in an institution during the fieldwork period. The SHARE data collection was based on a computer-assisted personal interview. The aim of the SHARE project was to collect longitudinal data on the aging process of Europeans. Here, we used the first (data collection in 2004 and 2005), second (2006 and 2007), fourth (2011 and 2012), fifth (2013) and sixth (2015) waves of data from 16 European countries (Austria, Germany, Sweden, Netherlands, Spain, Italy, France, Denmark, Greece, Switzerland, Belgium, Czech Republic, Poland, Luxembourg, Slovenia and Estonia). In SHARE, the third wave was a retrospective life history data collection wave (SHARELIFE) with different questionnaires, and was thus excluded from the current study sample. In the analyses, we have included all person-observations from participants who had data available concerning all variables studied and in both baseline (when the main independent variable and covariates were measured) and outcome (when the dependent variables were measured) study waves. Our final sample included 67,110 person-observations from 41,123 unique persons across the five waves of SHARE between 2004 and 2015.

Our dependent variables measured self-rated life satisfaction and meaning of life. In the case of life satisfaction, respondents were asked to report on a scale from 0 to 10 (0 = completely dissatisfied, 10 = completely satisfied) how satisfied they were with their

life ($M = 7.6$, $SD = 1.80$). In the case of meaning of life, respondents were asked to answer five questions on a 4-point scale (from 0 = never to 3 = often). These questions were as follows: How often do you look forward to each day? How often do you feel that your life has meaning? How often do you feel full of energy these days? How often do you feel that life is full of opportunities? How often do you feel that the future looks good for you? We calculated meaning of life scores by summing the scores for these five variables (Cronbach's $\alpha = 0.81$). The scale of the summed variable ranged between 0 and 16, and the higher the number, the higher the meaning of life score ($M = 12.5$, $SD = 3.07$). To correct for the skewness of the life satisfaction and meaning of life variables, analyses were also conducted to transform the variables using a cubic transformation. Because the results did not substantially diverge from the untransformed results, only the results obtained using the original variables are reported.

The main independent variable measured whether the older adults had children only or whether they had both children and grandchildren (0 = children only, 1 = children and grandchildren). Respondents who had neither children nor grandchildren were excluded because they could not experience entry into grandparenthood between study waves. Moreover, respondents with grandchildren and without children were excluded from the final sample. In the analyses, we used the group "children only" as the reference category.

The data were analyzed using multilevel ordinary least squares regression models, in which the repeated measures (i.e., person-observations) were nested within participants. We ran both between-person and within-person (or fixed-effect) models, where between-person effects represented the results across individuals and within-person effects showed the individual's variation over time (Curran & Bauer, 2011). The magnitude of the difference between within-person and between-person regression coefficients was tested using the Wald test (Carlin, 2005). In within-person models, participants served as their own controls, and these models eliminated all time-invariant factors (Allison, 2009), such as gender, many genetic factors and other selection effects. The fixed-effect procedure used here provides a strong test for causality in associations between the birth of a grandchild and the subjective well-being of older adults.

In these analyses we controlled for several potential confounding factors that were assessed at baseline (i.e., in all cases that is the study wave before the outcome measure

or exposure). Covariates included respondents' gender, age at interview, self-rated health (ranging from 1 = very poor to 5 = very good), education, working status and marital status (see Table 1). In addition, we controlled for the time period between the baseline and outcome measure interview ($M = 22.7$ months, $SD = 12.74$) and included country fixed effects in the analyses to adjust for clustering. To avoid excessive loss of observations, the gender of respondents' children (i.e., lineage) was controlled for only in sensitivity analyses (not shown) with similar results, rather than in the main analysis (the SHARE does not collect lineage information from multi-children families). The main results were illustrated by calculating predictive margins (and 95% confidence intervals) from the regression models.

[TABLE 1]

In the Results section, we provide descriptive results examining entering grandparenthood and correlations between the repeated subjective well-being outcome measures. Then, associations between grandparenthood and life satisfaction and between grandparenthood and the meaning of life were investigated. We included the interaction term of grandparenthood status and gender to explore differences between older women and men. Finally, we conducted analyses investigating potential lineage differences, taking the gender of respondents' children into account. In this case, we used the smaller sample, including participants who had no more than four children (and thus we had information on their children's gender), and investigated whether the existence of a maternal grandchild was more strongly associated with the grandparents' subjective well-being than the existence of a paternal grandchild or vice versa.

Results

First, we provide descriptive results of respondents who had within-person data and thus are included in fixed-effect models. According to transition probabilities, 23% of participants experienced an entry into grandparenthood between interviews, the numbers being 24% for women and 22% for men, respectively. Approximately 1% of participants reported a transition from the group "children and grandchildren" to the group "children only" either because of the death of a grandchild or response error. Next, we examined stability and change in subjective well-being ratings measured by intraclass correlations, reporting the correlation of the person-observations within a

person over time. The intraclass correlations for self-rated life satisfaction and meaning of life scores were 0.67 and 0.70, respectively, indicating relatively high stability of subjective well-being over time.

Next, we investigated the cross-sectional and longitudinal associations between grandparenthood and our first measure of subjective well-being, self-rated life satisfaction. The results of the total, between-person, and within-person multilevel regression models are presented in Table 2 and illustrated in Figure 1. As can be seen from the total model, grandparenthood was indeed associated with increased life satisfaction. However, these associations were limited to the between-person variation, which indicated associations across participants. This association was not found in the within-person model, which compared the same participants over time. According to the Wald test, the difference between within-person and between-person coefficients was statistically significant ($p < 0.05$). These findings suggest that when examined prospectively, the birth of a grandchild does not increase the life satisfaction of older Europeans.

[TABLE 2]

[FIGURE 1]

The associations between grandparenthood and meaning of life scores were investigated next. The results are presented in Table 2 and Figure 2. Similarly, in the total model, entering grandparenthood was associated with increased meaning of life scores. In contrast to the life satisfaction assessments, however, these effects existed in both between-person and within-person models. Based on the Wald test, the difference between between-person and within-person coefficients was statistically significant ($p < 0.05$), indicating that across-person effects were stronger than within-person effects. These findings do, however, support the proposition that the birth of a grandchild increases the meaning of life experienced by older European adults.

[FIGURE 2]

To study potential gender differences, we included interaction terms in the models that explored interactions between grandparenthood status and gender. In the case of life satisfaction, we did not find significant interactions in the total or between-person

models. However, in the within-person model, we found a significant interaction indicating that the life satisfaction of women increased more than that of men after they entered grandparenthood ($\beta = 0.14$, $SE = 0.07$, $p = 0.048$, $n = 67,110$ person-observations from 41,123 persons). In the case of meaning of life scores, we were unable to find significant interactions in the total, between-person or within-person models. This suggests the meaning of life scores increased equally for both women and men.

Finally, restricting the analyses to the sub-sample of individuals who had lineage information, we examined whether the birth of a maternal grandchild was more strongly associated with changes in the respondents' subjective well-being than the birth of a paternal grandchild or vice versa (Table 3). For these analyses, we constructed a new variable indicating whether respondents had maternal or paternal grandchildren (0 = children but no grandchildren, 1 = grandchildren via daughters only, 2 = grandchildren via both daughters and sons, 3 = grandchildren via sons only). In the case of life satisfaction, we found in the total and between-person models an association indicating that respondents with maternal grandchildren and with both maternal and paternal grandchildren were more satisfied compared to participants without grandchildren. In the between-person model, the group "grandchildren via sons only" also reached significant difference compared to the reference group "children but no grandchildren." However, these associations were not found in the within-person model. In the case of the meaning of life, we found in the total and between-person models that respondents with maternal and/or paternal grandchildren had higher meaning of life scores than those without grandchildren. In addition, a significant within-person association was found among those who experienced a birth of a paternal grandchild, indicating that having a paternal grandchild increase subjective well-being of older Europeans. According to the Wald test, the difference between within-person and between-person coefficients was statistically significant ($p < 0.05$).

[TABLE 3]

Discussion

In the present study, we have investigated whether grandparenthood and entry into grandparenthood are associated with subjective well-being among older Europeans. Our main finding was that the birth of a grandchild was associated with increased meaning of life scores among older Europeans. These results were present in between-person analyses representing results across participants (i.e., whether differences in subjective well-being existed among grandparents and non-grandparents) as well as in within-person models indicating participants' variation over time (i.e., whether becoming a grandparent was associated with changes in subjective well-being). Although the effect magnitude in the within-person model was relatively low, it was still statistically significant. Thus, we can conclude that our results provide support for the prediction that having a grandchild increases the meaning of life among older adults.

In addition, we found that being a grandparent was associated with increased life satisfaction in the between-person model. However, this association did not exist in the within-person model, which compared the same participants over time. Thus, these results did not provide support for the prediction that the birth of a grandchild increases the life satisfaction of older Europeans. The last mentioned finding also indicates that the previously-identified correlation between grandparenthood and life satisfaction by Powdthavee (2011) may be based on differences between grandparents and non-grandparents rather than within individuals over time.

The finding that having a grandchild was associated with increased meaning of life but not with increased life satisfaction among participants may be related to the fact that these measures indicate somewhat different aspects of subjective well-being. The meaning of life may indicate the degree to which a person experiences that his or her life has a purpose, while life satisfaction can be defined as measuring the degree to which a person perceives his or her entire life positively (Veenhoven, 2009). One possible reason for the differences found between the meaning of life scores and self-rated life satisfaction in the present study could be that the life satisfaction of older adults may increase immediately after the grandchild arrives and then drop to its previous level, while the meaning of life scores may indicate longer-term subjective well-being.

A previous study by Myrskylä and Margolis (2014) showed that the birth of a child was associated with a short-term increase in the self-rated happiness of parents but not in long-term happiness. In our sample, the follow-up period between the baseline and the outcome interview was slightly less than two years, and we do not know the exact date of the birth of a grandchild. This means that we were not able to calculate how many days there were between the birth of a grandchild and the study interview. To study whether there is a short-term increase in life satisfaction among grandparents, we would need data with shorter time intervals between waves and information on the date of birth of a grandchild. Another potential explanation for the lack of within-person associations between grandparenthood and self-rated life satisfaction could be based on the fact that the life satisfaction variable measures different aspects of life satisfaction before and after a grandchild arrives, meaning that this indicator may not capture the potentially deeper and more profound satisfaction caused by the birth of an offspring (Lyubomirsky & Boehm, 2010). Based on the present findings, the meaning of life scores seem to be more relevant indicators in capturing changes in subjective well-being, in comparison to self-rated life satisfaction.

We found also that the life satisfaction of women tends to increase more than that of men after they enter grandparenthood. This effect existed in the within-person but not in the between-person model. Prior studies with small-scale and non-representative samples have found that grandmothers are more satisfied with being a grandparent compared to grandfathers (e.g., Neugarten & Weinstein, 1964; Thiele & Whelan, 2008; Thomas, 1986). In contrast to the results related to self-rated life satisfaction, we did not find that after a grandchild was born, the meaning of life increased more among women than men or vice versa.

In addition, in the within-person model, we found that having a grandchild via a son (i.e., paternal grandchild) was associated with increased meaning of life but having a grandchild via a daughter (i.e., maternal grandchild) was not. This finding contrasts with those of a prior study using a small-scale and non-representative sample of data, finding that maternal grandparents were more satisfied with being a grandparent than they expected before the grandchild was born, whereas paternal grandparents' expectations and experiences did not differ from each other (Somary & Stricker, 1998). Our finding may be based on the fact that grandparents tend to be more inclined to care for their maternal than paternal grandchildren (Danieslbacka et al., 2011), meaning that

having a paternal grandchild may be less stressful. Alternatively, the finding could be based on the fact that in some cultures, sons and their families are preferred over daughters and their families, and the continuity of family name via sons is appreciated. Unfortunately, in the SHARE data, we do not have information on the sex of a grandchild, so we do not know whether grandparents place greater value on the birth of a grandson or a granddaughter. Finally, it is worth mentioning that the SHARE data provides complete lineage-based information only concerning the participants who do not have more than four children, meaning that individuals with a larger number of children were excluded from the analyses, which may have influenced the results. Thus, we call for future studies to investigate this lineage-based difference more precisely.

The present study has several methodological strengths. The most important strength is that with repeated-measures data, we were able to separate between-person and within-person associations from each another while studying the relation between grandparenthood and subjective well-being. Because we have used representative and cross-national data, our results could be more generalizable compared to single-country studies and studies using non-representative samples. Limitations of the present study include that the SHARE does not have systematic information on the gender of respondents' children, as mentioned above. In addition, the data lack variables at the grandchild level, and thus we do not know whether grandchild characteristics influence results. For instance, it could be that those who experience the birth of a grandson are more satisfied than those who experience the birth of a granddaughter or vice versa. Future studies should respond to this question.

Here, we have measured subjective well-being using self-rated life satisfaction and meaning of life scores. Another potential way to study grandparenthood and subjective well-being is to investigate whether losing contact with a grandchild is associated with decreased well-being. Moreover, it could be that the death of a grandchild is associated with both a short-term and a long-term decrease in grandparents' well-being, because the loss of an offspring is one of the worst tragedies one may imagine (Youngblut et al., 2015). Because of these data limitations, we were unable to study these questions here, and thus, we call for future studies to concentrate on these issues.

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Table 1. Descriptive statistics of the 67,110 person-observations from 41,123 persons over waves 1, 2, 4, 5 and 6 in the Survey of Health, Ageing and Retirement in Europe

	Total no.	No. of persons	%	Mean (SD)	Within-person SD
Gender					
Men	27,850	17,504	41.5		
Women	39,260	23,619	58.5		
Age at interview	67,110			65.1 (9.43)	1.88
Partnership status					
Have a spouse/partner	43,825	28,191	65.3		
No spouse/partner	23,285	13,681	34.7		
Years of education	67,110			10.9 (4.34)	
Employment status					
Working	18,855	13,124	28.1		
Not working	48,255	30,404	71.9		
Self-rated health	67,110			2.94 (1.07)	0.41
Country					
Austria	4,656	2,800	6.9		
Germany	4,512	3,143	6.7		
Sweden	5,068	2,987	7.6		
Netherlands	3,200	1,917	4.8		
Spain	5,160	3,291	7.7		
Italy	5,227	2,884	7.8		
France	5,896	3,338	8.8		
Denmark	4,645	2,597	6.9		
Greece	1,298	1,298	1.9		
Switzerland	4,021	2,102	6.0		
Belgium	7,390	4,004	11.0		
Czech Republic	5,823	3,654	8.7		

(TABLE 1 CONTINUED)

Poland	916	916	1.4
Luxembourg	675	675	1.0
Slovenia	2,863	1,836	4.3
Estonia	5,760	3,681	8.6

Notes. Total no. = Number of total person-observations; No. Of persons = Number of unique persons;
SD = Overall standard deviation; Within-person SD = Within-person standard deviation.

Table 2. Associations between grandparenthood and subjective well-being

	Total				Between				Within			
	β	SE	95% CI		β	SE	95% CI		β	SE	95% CI	
			lower	upper			lower	upper			lower	upper
Life satisfaction												
Grandparenthood status												
Children but no grandchildren	ref				ref				ref			
Both children and grandchildren	0.09***	0.02	0.05	0.12	0.12***	0.02	0.08	0.16	0.01	0.04	-0.06	0.08
Meaning of life												
Grandparenthood status												
Children but no grandchildren	ref				ref				ref			
Both children and grandchildren	0.22***	0.03	0.16	0.27	0.25***	0.03	0.19	0.32	0.15**	0.06	0.04	0.27

Values are β -coefficients of multilevel ordinary least squares regressions; n = 67,110 person-observations from 41,123 unique persons.

* p < 0.05., ** p < 0.01., *** p < 0.001.

Table 3. Grandparenthood and subjective well-being by lineage

	Total				Between				Within			
	β	SE	95% CI		β	SE	95% CI		β	SE	95% CI	
			lower	upper			lower	upper			lower	upper
Life satisfaction												
Grandparenthood status												
Children but no grandchildren	ref				ref				ref			
Grandchildren via daughters only	0.09***	0.02	0.05	0.14	0.13***	0.02	0.08	0.18	-0.03	0.06	-0.15	0.10
Grandchildren via daughters and sons	0.12***	0.02	0.08	0.15	0.16***	0.02	0.12	0.20	-0.02	0.05	-0.11	0.07
Grandchildren via sons only	0.03	0.02	-0.02	0.07	0.06*	0.03	0.01	0.11	0.05	0.06	-0.06	0.17
	Total				Between				Within			
	β	SE	95% CI		β	SE	95% CI		β	SE	95% CI	
			lower	upper			lower	upper			lower	upper
Meaning of life												
Grandparenthood status												
Children but no grandchildren	ref				ref				ref			
Grandchildren via daughters only	0.19***	0.04	0.11	0.26	0.22***	0.04	0.14	0.30	0.08	0.11	-0.12	0.29
Grandchildren via daughters and sons	0.25***	0.04	0.19	0.32	0.29***	0.04	0.23	0.36	0.10	0.08	-0.04	0.25
Grandchildren via sons only	0.16***	0.04	0.08	0.23	0.19***	0.04	0.10	0.27	0.25**	0.10	0.06	0.44

Values are β -coefficients of multilevel ordinary least squares regressions; n = 39,072 person-observations from 63,629 unique persons.

* p < 0.05., ** p < 0.01., *** p < 0.001.

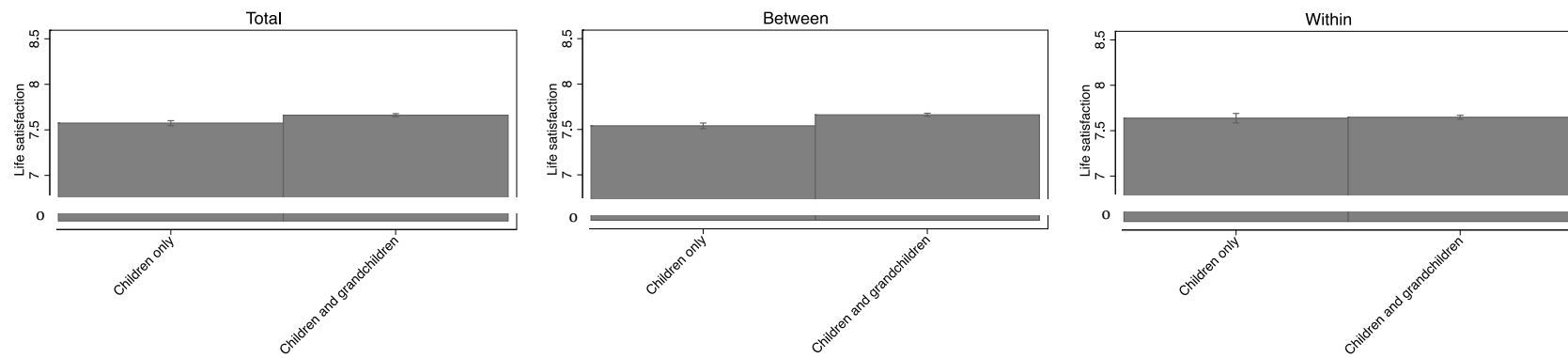


Figure 1. Associations between grandparenthood and life satisfaction (predictive margins and 95% confidence intervals) (see Table 2 for statistical details)

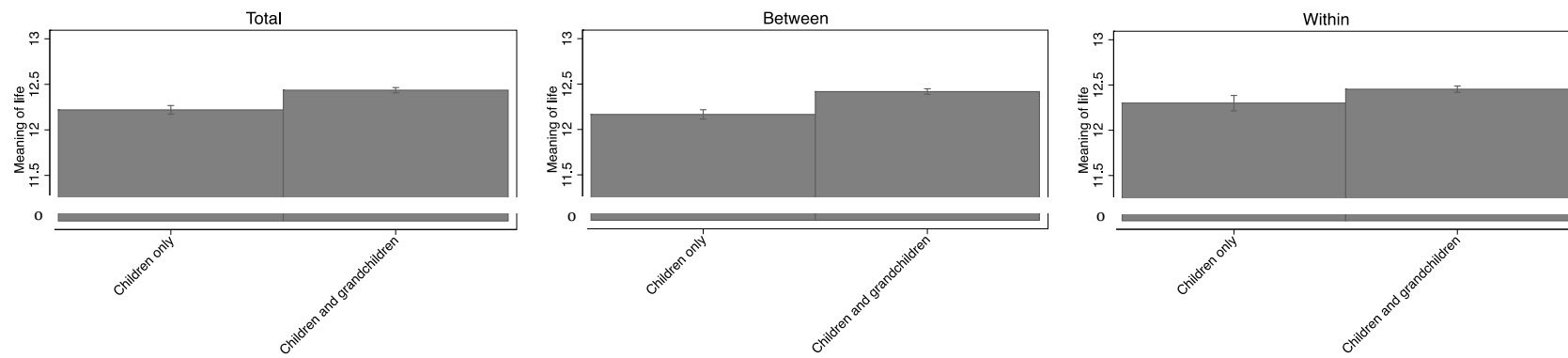


Figure 2. Associations between grandparenthood and meaning of life (predictive margins and 95% confidence intervals) (see Table 2 for statistical detail)